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Serial No.: 10/065,239
Confirmation No.: 9441
Applicants: TISSLER, Arno *et al.*
Atty. Ref.: 00173.0022.EPUS00

AMENDMENTS TO THE CLAIMS:

1. (Previously Presented) A porous material for catalytic conversion of exhaust gases comprising a carrier with a first porous structure and an oxidation catalyst (OX) which in the presence of oxygen (O_2) and according to a first reaction has the ability to catalyze oxidation of nitrogen monoxide (NO) into nitrogen dioxide (NO_2) and, according to a second reaction, to catalyze oxidation of a reducing agent (HC), which oxidation catalyst (OX) is enclosed inside the first porous structure and the oxidation catalyst (OX) comprises iron (Fe) and silver (Ag) loaded on a zeolite.

2. (Original) The porous material according to claim 1, wherein the first porous structure further comprises a zeolite with MFI framework type structure.

3. (Original) The porous material according to claim 2, wherein the oxidation catalyst (OX), due to the iron (Fe) and silver (Ag), is arranged to prevent the reducing agent (HC) from reacting in the oxidation catalyst (OX) or to slow down the reaction of the reducing agent (HC) in the oxidation catalyst (OX) in order to enable primarily the first reaction, out of said first and second reactions, to take place over the oxidation catalyst (OX) during the catalytic conversion of the exhaust gases.

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4. (Original) The porous material according to claim 1, said porous material further comprising:

a carrier with a second porous structure and a reduction catalyst (RED), that in the presence of the reducing agent (HC) is able to selectively catalyze reduction of nitrogen dioxide (NO_2) into nitrogen (N_2), and according to a third reaction, the reducing agent (HC) participates and is at least partially consumed, and the reduction catalyst (RED) is located in the second porous structure, which has such dimensions that the reducing agent (HC) can come into contact with the reduction catalyst (RED) in order to enable the third reaction to take place.

5. (Original) The porous material according to claim 4, wherein the first porous structure on an average exhibits smaller entrances for the reducing agent (HC) than the second porous structure.

6. (Original) The porous material according to claim 4, wherein both the first and the second porous structures are provided in the same coating layer of the porous material.

7. (Original) The porous material according to claim 4, wherein the first and the second porous structures are provided in different coating layers of the porous material.

8. (Original) The porous material according to claim 4, wherein the carrier with the second porous structure has a molecule size and/or adsorption properties of the reducing agent (HC).

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9. (Original) The porous material according to claim 4, wherein the ratio between oxidation catalyst (OX) and reduction catalyst (RED) is optimized so that the production of nitrogen dioxide (NO_2), according to the first reaction, essentially corresponds to the consumption of nitrogen dioxide (NO_2), according to the third reaction.

10. (Original) The porous material according to claim 4, further comprising:

a first portion and a second portion, wherein the first portion is intended to receive the exhaust gases before the second portion during the catalytic conversion, and the first portion contains a larger quantity of the oxidation catalyst (OX) than the second portion, whereas the second portion contains a larger quantity of the reduction catalyst (RED) than the first portion.

11. (Original) The porous material according to claim 4, wherein the porous material comprises a second zeolite, providing the second porous structure.

12. (Original) The porous material according to claim 11, wherein the porous material comprises a physical mixture of the first zeolite and the second zeolite.

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13. (Original) The porous material according to claim 12, wherein the porous material comprises a layered structure of the first zeolite and the second zeolite, wherein said first and second zeolites, depending on the expected composition of the exhaust gases which are to be catalytically converted, have been arranged in relation to each other in said layered structure, and the second zeolite encounters the exhaust gases before the first zeolite during the catalytic conversion.

14. (Original) The porous material according to claim 12, wherein the second zeolite, providing the second porous structure, has been applied by over-growth onto the first zeolite, providing the first porous structure.

15. (Original) The porous material according to claim 12, wherein the content of oxidation catalyst (OX) has been reduced in outer layers of the first zeolite by means of regulating penetration depth and dispersion.

16. (Original) The porous material according to claim 12, wherein an additional zeolite crystal layer with a reduced content of oxidation catalyst (OX) has been crystallized onto the crystal structure of the first zeolite.

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17. (Original) The porous material according to claim 12, wherein the crystal structure of the first zeolite comprises crystal grains having a grain size and a shape which has been optimized both in order to prevent reaction of the reducing agent (HC), and in order to allow effective oxidation of NO to NO_2.

18. (Original) The porous material according to claim 4, wherein the reducing agent (HC), which is at least partially consumed according to the third reaction, is a hydrocarbon (H_xC_y) and a chemical compound ($H_xC_yO_zS_w$) that further comprises oxygen and sulphur.

19. (Original) The porous material according to claim 2, wherein the reduction catalyst is an acidic zeolite catalyst.

20. (Original) The porous material according to claim 2, wherein the reduction catalyst (RED) comprises at least one of Bronstedt acid sites, silver (Ag), iron (Fe) copper (Cu), Rhodium (Rh), Indium (In), Iridium (Ir), and combinations thereof.

21. (Original) The porous material according to claim 1, wherein the first and the second porous structures are provided in carriers attached to a substrate.

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22. (Previously Presented) A method for catalytic conversion of exhaust gases, said method comprising:

providing a porous material for catalytic conversion of exhaust gases comprising a carrier with a first porous structure and an oxidation catalyst (OX) that in the presence of oxygen (O_2), and according to a first reaction, has an ability for catalytic oxidation of nitrogen monoxide (NO) into nitrogen dioxide (NO_2) and, according to a second reaction, has an ability for catalytic oxidation of a reducing agent (HC), and the oxidation catalyst (OX) is enclosed inside the first porous structure and comprises iron (Fe) and silver (Ag) loaded on a zeolite; and

oxidizing nitrogen monoxide (NO) into nitrogen dioxide (NO_2) over the oxidation catalyst(OX) according to the firstreaction-and oxidizing a reducing agent (HC) according to a the second reaction therebycausing the reducing agent (HC) to be affected in at least one of the following ways: a) preventing the reducing agent (HC) from coming into contact with the oxidation catalyst (OX) and b) slowing the reaction of the reducing agent (HC) in the oxidation catalyst(OX), and thereby causing as a primary result of the first reaction, oxidation due to the presence of iron (Fe) and silver (Ag).

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23. (Previously Presented) The method according to claim 22, further comprising:

a third reaction over a reduction catalyst (RED), wherein nitrogen dioxide (NO_2), in the presence of a reducing agent (HC), is reduced into nitrogen (N_2) and the reducing agent (HC) participates in the third reaction and is thereby at least partially consumed in order to provide catalytically converted exhaust gases having reduced content of nitrogen monoxide (NO), nitrogen dioxide (NO_2) and the reducing agent (HC), and a proportionately low content of dinitrogen oxide (N_2O) and/or carbon monoxide (CO).

24. (Original) The method according to claim 22, wherein an additional amount of reducing agent (HC) is added before reduction takes place over the reduction catalyst (RED) according to the third reaction.

25. (Original) The method according to claim 24, wherein the additional amount of reducing agent (HC) is regulated on the basis of a measured or previously mapped content of reducing agent (HC) and/or nitrogen oxides (NO_x) in the exhaust gases.

26. (Original) The method according to claim 24, wherein the measured content of reducing agent (HC) or nitrogen oxides (NO_x) in the catalytically converted exhaust gases is used in a diagnostic control system as a measure of the status of the catalytic conversion.

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27. (Original) The method according to claim 22, wherein the exhaust gases, before oxidation over the oxidation catalyst (OX) according to the first reaction, are passed through a device having the ability to store and when necessary release nitrogen oxides (NO_x).

28. (Original) The method according to claim 22, wherein the exhaust gases, before oxidation over the oxidation catalyst (OX) according to the first reaction, are passed through a device having the ability to store and when necessary release reducing agent (HC).

29. (Original) The method according to claim 22, wherein the temperature of the exhaust gases is regulated in order to be within an active temperature interval of the oxidation catalyst (OX) and the reduction catalyst (RED).

30. (Original) The method according to claim 22, wherein at least partially catalytically converted exhaust gases, after oxidation over the oxidation catalyst (OX) and reduction over the reduction catalyst (RED), are allowed to pass a second oxidation catalyst over which oxidation of residues of reducing agent (HC) and/or carbon monoxide can take place.

31. (Original) The method according to claim 22, wherein the exhaust gases originate from an internal combustion engine, and that the reducing agent (HC) comprises a hydrocarbon (H_xC_y) and/or a chemical compound ($H_xC_yO_zS_w$) further containing oxygen/and or sulphur.

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32. (Original) The method according to claim 31, wherein the fuel consumption of the internal combustion engine, influencing the chemical composition of the exhaust gases, and the residue content of nitrogen oxides (NO_x) in the catalytically converted exhaust gases are regulated in order to fulfill relevant legislative regulations.

33. (Original) The method according to claim 31, wherein the internal combustion engine is a diesel engine and that the reducing agent (HC) originates from internal combustion in said diesel engine.

34. (Original) The method according to claim 33, wherein an additional amount of reducing agent (HC) is added via one of a) a fuel injector of the diesel engine and b) a separate injector for additional reducing agent.

35. (Previously Presented) A porous material for catalytic conversion of exhaust gases, said porous material comprising:

a carrier with a first porous structure and an oxidation catalyst (OX) that in the presence of oxygen (O_2), according to a first reaction, has the ability to catalyze oxidation of nitrogen monoxide (NO) into nitrogen dioxide (NO_2) and, according to a second reaction, to catalyze oxidation of a reducing agent (HC), which oxidation catalyst (OX) is enclosed inside the first porous structure, said reducing agent being at least partly sterically prevented from coming into contact with the oxidation catalyst, and, wherein the oxidation catalyst (OX) comprises iron (Fe) and silver (Ag) loaded on a zeolite.

36. (Original) The porous material according to claim 35, wherein the oxidation catalyst (OX) comprises catalytic material in the form of substantially only iron (Fe) and silver (Ag) loaded on a zeolite.

37. (Original) The porous material according to claim 35, wherein the first porous structure comprises a zeolite with MFI framework structure type.

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38. (Original) The porous material according to claim 35, wherein the oxidation catalyst (OX), due to the iron (Fe) and silver (Ag), is arranged to perform at least one of the following: a) prevent the reducing agent (HC) from reacting in the oxidation catalyst (OX) and b) arranged to slow down the reaction of the reducing agent (HC) in the oxidation catalyst (OX); and thereby enabling primarily the first reaction, out of said first and second reactions, to take place over the oxidation catalyst (OX) during the catalytic conversion of the exhaust gases.

39. (Previously Presented) A method for catalytic conversion of exhaust gases, said method comprising:

providing a porous material for catalytic conversion of exhaust gases comprising a carrier with a first porous structure and an oxidation catalyst (OX) that in the presence of oxygen (O_2), and according to a first reaction, has an ability for catalytic oxidation of nitrogen monoxide (NO) into nitrogen dioxide (NO_2) and, according to a second reaction, has an ability for catalytic oxidation of a reducing agent (HC), and the oxidation catalyst (OX) is enclosed inside the first porous structure and comprises iron (Fe) and silver (Ag) loaded on a zeolite; and

oxidizing nitrogen monoxide (NO) into nitrogen dioxide (NO_2) over the oxidation catalyst (OX) according to the first reaction and oxidizing a reducing agent (HC) according to ~~a~~ the second reaction thereby causing the reducing agent (HC) to be at least partlysterically prevented from coming into contact with the oxidation catalyst (OX) and causing ~~that~~ the reaction of the reducing agent (HC) in the oxidation catalyst (OX) to be prevented or slowed down due to the presence of iron (Fe) and silver (Ag) and as a result of which the first reaction primarily takes place over the oxidation catalyst (OX).